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**Topic Area 1: Concepts, Theory and Policy**

**Transformation of European Defense Cooperation: A Complex Endeavor**

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# **Transformation of European Defense Cooperation: A Complex Endeavor**

## **Abstract**

The United States (US) “pivot to the Asia-Pacific region”, will force the European allies to become serious about addressing the longstanding transatlantic gap in the military capabilities of the North Atlantic Treaty Organization (NATO) to the extent that they will be able to collectively take care of conflicts and threats in their backyard without decisive US support. In the long term, this requires nothing less than a far reaching transformation of defense cooperation in Europe. Currently such cooperation is limited to the occasional pooling and sharing of national military assets. As a conceptual framework for this necessary transformation we propose to adopt the NATO Network-Enabled Command and Control (C2) Maturity Model (N2C2M2). Developed and validated over the past decade by a group of international researchers, this model describes a concept for improving C2 of complex military operations and the management of complex endeavors characterized by the participation of a large number and variety of military and non-military actors. There is significant historic evidence that improving defense cooperation in Europe is a highly complex endeavor in need of more appropriate management approaches.

## **Introduction**

The US pivot to the Asia-Pacific region (Donilon, 2011; Manyin et al., 2012) will force the European allies to become serious about addressing the longstanding problem of the transatlantic gap in NATO’s military capabilities to the extent that they will become able to collectively take care of crises and threats in their backyard without decisive US support. While only of marginal interest to the United States (Friedman, 2012), conflicts such as recently in Libya and Mali and currently in Syria, South Sudan, and Central Africa as well as terrorist operations of various Al-Qaeda groups emerging, across North Africa from the Atlantic to the Persian Gulf, represent potential threats that require Europe’s urgent attention (Münkler, 2002 and 2006; Smith, 2006).

In the 1990s, studies had shown that the transatlantic gap in NATO’s conventional military capabilities could have been reduced significantly if the European members of the alliance had coordinated their national defense planning and integrated their military capabilities. This would have eliminated wasteful redundancies and improved the efficiency of the European pillar’s collective defense spending to a level comparable to that of the United States (Huber and Schmidt, 1999; Huber, 2003). However, at that time the idea of

“Convergent Defense Planning”<sup>1</sup> was dismissed as unrealistic by both political and military elites in NATO-Europe because the respective studies did not account for differences in national interests and strategic cultures that limited comprehensive defense cooperation among European allies. In the ensuing years, it seems that the situation has changed. The lessons learned from the Balkans and Afghanistan with regard to interoperability, and the cuts in Europeans’ defense spending in the wake of the financial crisis and the associated reductions of national military capabilities have prompted some rethinking (Marone, 2012; O’Donnell, 2012). It now seems that the need for improving defense cooperation is generally acknowledged in NATO and the European Union (EU). However, initiatives and agreements to that end fall short of achieving a comprehensive and coherent coordination of defense planning among allies. On the contrary, item 7 of the press release of May 20, 2012 on NATO’s Chicago Summit Declaration points out: “The development and deployment of defence capabilities is first and foremost a national responsibility” (NATO, 2012). Thus, we propose to revisit the ideas of convergent defense planning and suggest a new way of thinking about Europe’s approach to cooperation.

The model of cooperation we propose to adopt for this purpose is based on the N2C2M2. Developed under the aegis of the Systems and Studies (SAS) Panel of the NATO-Science and Technology Organizations (STO) by a multinational research task group (SAS-065), this model provides a conceptual framework that facilitates understanding and discussion of a range of increasingly network-enabled C2 approaches. Such approaches are required if NATO forces are to achieve the network-enabled operational capability levels defined in the NEC Feasibility Study.<sup>2</sup> These new, more network-enabled approaches are needed to provide the agility required for the management of complex civil-military endeavors. Complex Endeavors are characterized by multinational coalitions consisting of numerous and diverse military and non-military organizations and entities operating in complex and dynamic environments.<sup>3</sup> We assert that the empirically tested N2CM2 is the appropriate conceptual framework for thinking about requirements for, and approaches to, improving European defense cooperation. This is certainly a complex endeavor when considering the number and

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<sup>1</sup> The term „Convergent Defense Planning” coined by Huber implied that, while spending a fair share of their national resources on defense, all NATO countries agreed on common principles for the coordinated evolution, or co-evolution, of their national military forces in order to enable the Alliance meeting, in an efficient manner, the challenges that may emerge in the uncertain post-Cold War security environment.

<sup>2</sup> At their meeting in November 2002, in the weeks prior to the Prague Summit, the NATO C3 Board (NC3B) agreed that there was a need to develop a NATO concept to adapt national initiatives such as the U.S. Network-Centric Warfare (NCW) and the U.K. Network-Enabled Capability (NEC) to the NATO context. This NATO concept is referred to as the “NATO Network Enabled Capability” (NNEC). In 2003, nine NATO nations launched a 2-year feasibility study on Network Enabled Capability (NC3A, 2005).

<sup>3</sup> The term “Complex Endeavors” refers to undertakings characterized by multiple interdependent ‘chains of command’ and the number and diversity of the participants (entities) whose goals may conflict with one another and whose perceptions of the situation may differ in important ways. Furthermore, the effects space (situations) spans multiple domains (Physical, Information, Cognitive and Social) and there is a poor understanding of networked cause-and-effect relationships and difficulty in predicting effects that are likely to arise from alternative courses of action. These characteristics reflect six principal features of Complex Adaptive Systems and their relationship to Information Age Warfare as described in (Moffat, 2003).

diversity of political, military and industrial stakeholders involved in nearly all of the European countries on the one hand, and the complexities, dynamics and uncertainties of the 21<sup>st</sup> century's security environment on the other.

### The NATO NEC C2 Maturity Model

Complex endeavors are characterized by a set of diverse entities that are connected, or networked, and thus principally capable of collectively generating coherent effects and improved mission effectiveness by bringing to bear their collective capabilities and resources. The basic mechanism for taking advantage of their collective capabilities and resources is embodied in the network-centric operations value chain that encompasses the following four domains, as illustrated in Figure 1:

- The physical domain where effects take place;
- The information domain where information is created, processed and shared;
- The cognitive domain where beliefs, values, perceptions, awareness and understanding reside and where, as a result of sense making, decisions are made; and,
- The social domain where entities interact by sharing resources, awareness and understanding.

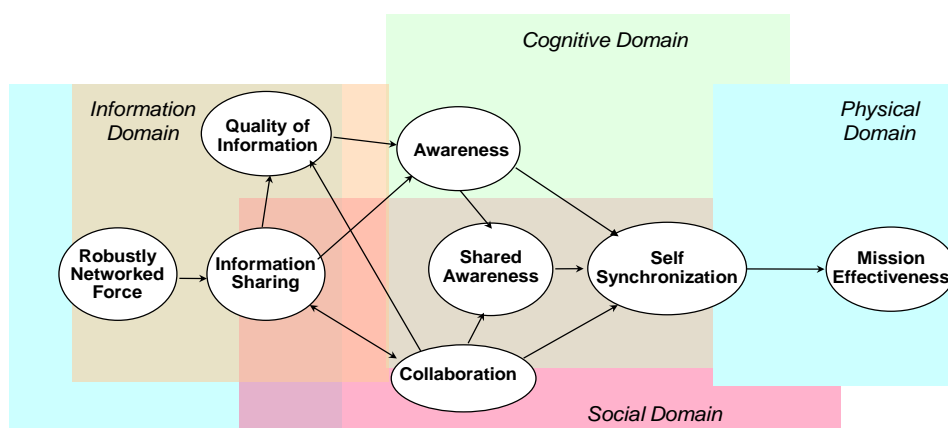


Figure 1: Network-Centric Operations Value Chain (Alberts and Hayes, 2003)

Mission effectiveness in the physical domain depends directly on the quality of and the degree to which the activities in the information, cognitive, and social domains unfold, given the constraints of the C2 approaches practiced by the participating entities (Alberts and Hayes, 2003)

## **C2 Approaches and the C2 Approach Space**

Consistent with the NEC Feasibility Study's five levels of operational capability and their objectives, the N2C2M2 has grouped the set of corresponding C2 Approaches into five classes<sup>4</sup> each characterized by three variables:

- 1) The degree to which decision rights are allocated or delegated by entities to the Collective ;
- 2) The patterns of interactions among entities; and,
- 3) The degree to which information is distributed among entities.<sup>5</sup>

The regions of the three dimensional Approach Space within which these five classes of C2 Approaches are located are shown in Figure 2. They lie sequentially along the diagonal vector of this C2 Approach space, with Conflicted C2 at the origin and Edge C2 in the upper right hand corner. These axes are not independent of each other. In fact as an entity moves along the vector of C2 approaches, its approach to C2 becomes more network-enabled and the domain focus changes (NATO, 2010). This implies, for example, that as one moves up the left hand side of Figure 2, the frequency of interactions between and among entities increases and thus their focus shifts from the Information domain (from sparse to rich exchange of information) to the Cognitive domain (toward higher degrees of situational awareness) and to the Social domain (toward higher degrees of shared awareness and understanding and increased sharing of resources).

The regions occupied by each of the C2 Approaches are summarized in Figure 3 in terms of the values of the three defining variables listed across the top. The gaps between Conflicted and De-conflicted C2, and between Collaborative and Edge C2, indicate that there is a qualitative difference between them with regard to the allocation of decision rights to the Collective

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<sup>4</sup> In ascending order of capability, the five levels of NATO operational capability (and corresponding C2 approaches) are 1) Disjointed Operations (Conflicted C2); 2) De-conflicted Operations (De-conflicted C2); 3) Coordinated Operations (Coordinated C2); 4) Integrated Operations (Collaborative C2); 5) Transformed Operations (Edge C2).

<sup>5</sup> In large part, information distribution determines the respective *Entity Information Positions* in terms of their relevance, timeliness, and accuracy of information vis-à-vis an adversary. For a detailed explanation of the term *Information Position* see Alberts et al. (1999), p.56.

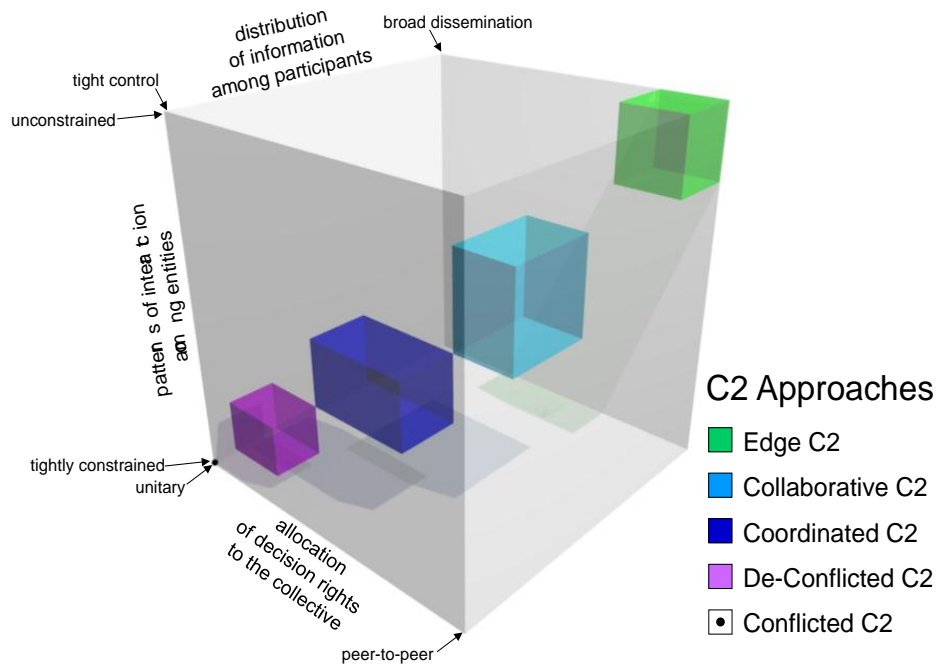


Figure 2: C2 Approaches and the C2 Approach Space (NATO, 2010)

In the case of Conflicted C2, there is no interaction among participating entities and no delegation of decision rights at all from individual entities to the Collective. The entities operate in a stand-alone mode, making decisions and developing plans based on their organic information only. Thus, in practical terms there is no Collective. For the other extreme of Edge C2, an emergent, tailored and dynamic process of allocation of decision rights is expected, as opposed to the more well-defined planning and decision processes seen in De-conflicted, Coordinated, and Collaborative C2. The dashed lines between the latter indicates that the exact boundaries between them are difficult to define precisely, and the two-headed arrows signify that the transition between them can be effected by changing constraints regarding patterns of interaction and distribution of information.

C2 Approach	Allocation of Decision Rights to the Collective	Patterns of Interaction Among Participating Entities	Distribution of Information (Entity Information Positions)
Edge C2	Not Explicit, Self-Allocated (Tailored, and Dynamic)	Unlimited As Required	All Available and Relevant Information Accessible
Collaborative C2	Collaborative Process and Shared Plan	Significant Broad	Additional Information Across Collaborative Areas/Functions
Coordinated C2	Coordinated Process and Linked Plans	Limited and Focused	Additional Information About Coordinated Areas/Functions
De-Conflicted C2	Establish Constraints	Very Limited Sharply Focused	Additional Information About De-Conflicted Areas/Functions
Conflicted C2	None	None	Organic Information

Figure 3: Variables defining collective C2 Approach (NATO, 2010)

In addition to these three characteristic variables, there are a number of other entity properties enabled by the characteristics of a C2 approach that can be used to distinguish among them. These include the degree of shared awareness<sup>6</sup> and the degree of task-based organization across the Collective, both of which increase as C2 approaches become more network-enabled.

### C2 Maturity and C2 Agility

The Network-Centric Maturity Model proposed by Alberts, et al. (1999) was about entities becoming more network-centric with the term “C2 maturity” reflecting the ability of C2 approaches to develop more shared awareness and then ultimately to exhibit increasing ability to manifest self-synchronizing behaviors. Based on the insights from validation case studies and experiments conducted by SAS-065, it was apparent that the terms “more networked enabled” and “more mature” were being used synonymously. Therefore, the members of SAS-065 reserved the use of the term C2 Maturity to describe the capability of an entity to move around in the C2 Approach space in an appropriate manner. Thus, C2 Maturity includes the ability of a C2 or management system to recognize the

<sup>6</sup> The degree of shared awareness across the Collective is – together with the degree of shared understanding and the adaptability of the Collective C2 process – a measure of C2 effectiveness.



appropriateness of different C2 approaches, and the ability to transition between them.<sup>7</sup> As a consequence, NATO SAS-065 introduced the ‘toolkit’ analogy that views each C2 ‘maturity level’ having a toolkit at its disposal consisting of a number of C2 approaches, as shown in Figure 4, and, of equal importance, the ability to transit between the available approaches where and when necessary as the conflict unfolds.

For example, C2 maturity level 5 (including Edge C2) has all four non-conflicted approaches in its toolkit and C2 agility requires the ability to match one of these to the military task at hand. Thus, having the requisite classes of C2 approach in an entity’s or Collective’s C2 system toolkit is necessary but not sufficient in order to respond in a timely manner or to exploit situational change involving one’s own coalition (self), the mission and/or the environment. To this end, entities or the collective must also be able to recognize which of the C2 approaches in their toolkit is appropriate to cope with changes as they are recognized, emerging, or anticipated, and they must have the ability to transition to the appropriate approach.

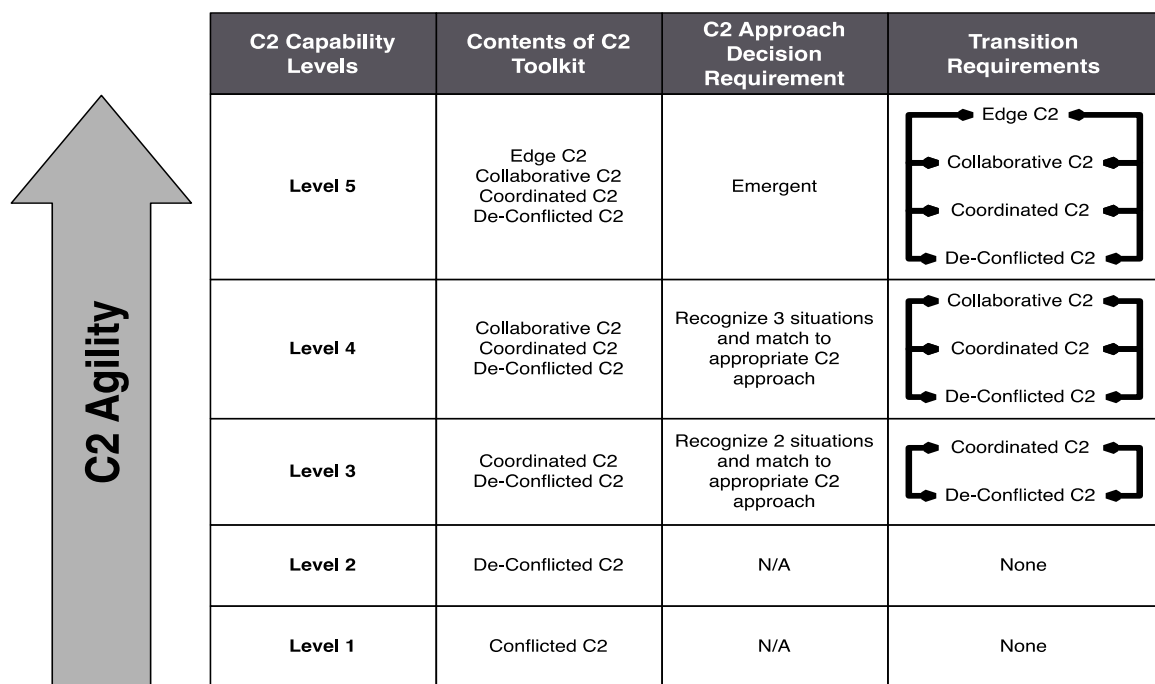


Figure 4: C2 Maturity Levels and C2 Agility (NATO, 2010)

<sup>7</sup> Based on a comparison of the results of two case studies of natural disaster relief endeavors (Elbe Flood of 2002 in the eastern part of Germany and the Tsunami 2004 in Aceh), it was concluded that whether or not a given C2 approach is sufficient or appropriate to handle a situation depends on the situational complexity and the dynamics of the operational environment. Thus the terms requisite maturity and requisite agility were proposed to describe the capability of a C2 or management system to transit between “appropriate” C2 approaches in dynamic operational environments characterized by more or less frequent changes of situation (Huber et al, 2008).

Evidence from case studies implies that deep shared situational understanding is required in order to anticipate complex and rapid situational changes that may otherwise overwhelm a Collective's operational capabilities unless counteracted.

As illustrated by the arrow on the left in Figure 4, SAS-065 hypothesized that as an entity possesses a more mature C2 capability, it will become more agile. This hypothesis has been validated (through of a series of case studies and experiments) by the follow on activities of NATO STO-SAS-085, which defined agility as the capability to successfully effect, cope with, and/or exploit changes in circumstances.<sup>8</sup>

*Successfully* is defined as operating within acceptable bounds. *Change in Circumstances* includes changes to the state of entities and the environment in the physical domain as well as in the Information, Cognitive and Social domains, changes of mission and strategy, and objectives within them. *Effect* implies being proactive and therefore able to bring about a timely change in circumstances in order to improve performance, effectiveness and efficiency. *Cope with* implies dealing with a change in circumstances that, if not appropriately addressed, would adversely affect performance (effectiveness and efficiency). *Exploit* implies capitalizing on an opportunity to take advantage of changed circumstances that, if not seized, would result in an opportunity loss (a failure to improve performance – effectiveness or efficiency or both).

Agility is dependent on six interdependent variables (enablers) as defined by SAS-065 (NATO, 2010) that entities seek to control to realize the amount of Agility they desire:

- Responsiveness,
- Versatility,
- Flexibility,
- Resilience,
- Innovativeness, and
- Adaptability.

The enablers of Agility are part of an “Agility Value Chain” as illustrated in Figure 5 (NATO,2014) which depicts Agility to be a function of both Self and the challenges associated with the mission and the environment.

Thus, Agility is a function of its enablers which, in turn, are determined by the quality of information and the behaviors that result from the characteristics of Self and the nature of the Endeavour Space. From Figure 5 one can see that the Agility Value Chain is not a simple ‘string’ of links, but is in reality a mesh or network of interdependent variables.

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<sup>8</sup> This definition provided the basis for the exploration of the concept of Agility as it applies to the C2 of military forces in the context of Complex Endeavors, that ultimately resulted in SAS-085's conceptual model of Agility (NATO, 2014)

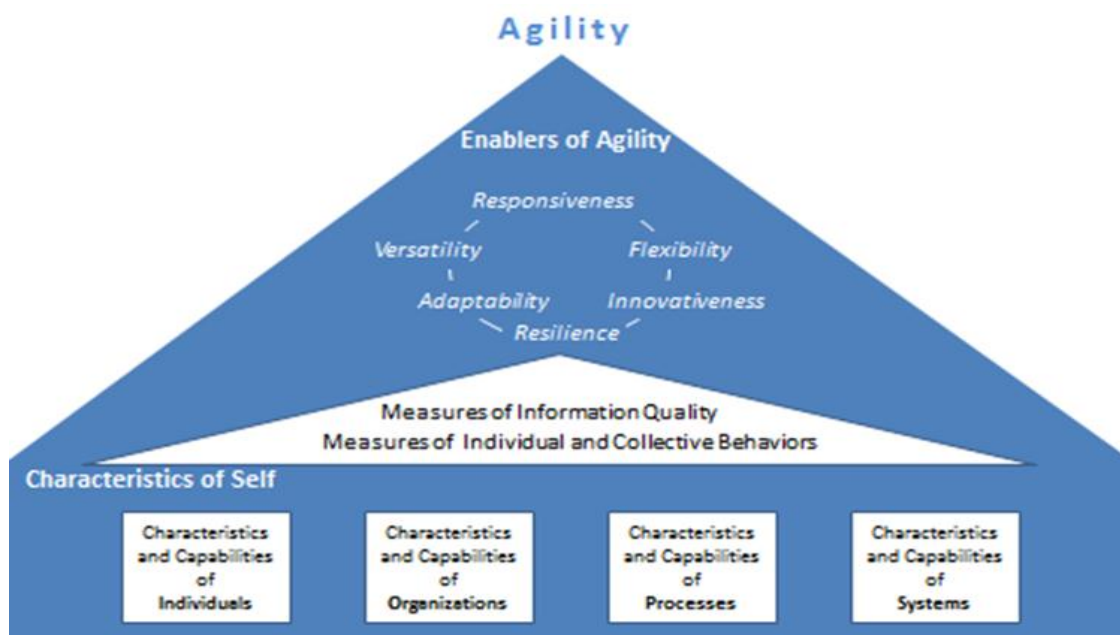


Figure 5: The C2 Agility Value Chain (NATO, 2014)

The insights provided by the validation case studies and the results of the experiments<sup>9</sup> conducted by SAS-085 suggest that C2 Agility, i.e., the ability to adapt C2 and management approaches in a timely way to changes in the operational environment, will become an ever more critical capability given the uncertainty associated with the increasing complexity and dynamics of the 21<sup>st</sup> century's strategic environment.<sup>10</sup>

<sup>9</sup> The case studies analyzed well documented endeavors in the areas of Peacekeeping (Ruanda 1994), Cyberwar (Estonia 2007 and Georgia 2008), Disaster Management (Earthquakes In Garda 2004 and Haiti 2010), Terrorism (Olympic Games in Munich 1972 and Vancouver 2010) and Counter Insurgency (Helmand-Afghanistan, 2010/11). The experiments were conducted using several simulation platforms available in Canada, Italy, Portugal, UK and USA to investigate variations of independent variables on C2 agility in different operational contexts.

<sup>10</sup> The records of historical interventions support the hypothesis that chances for controlling and ending intra-national or trans-national crises and armed conflicts improve with the effectiveness and responsiveness of interventions. Quick and determined action is necessary in order to avoid or contain the escalation of armed conflicts. This is because the higher the level of mutual violence between inimical groups the lower is their inclination for a peaceful settlement of the conflict (Dudouet, 2006). If a certain level of violence has been exceeded, the only solution remaining may be peace-enforcement and temporary physical separation of the antagonists such as in Bosnia-Herzegovina between Bosniacs, Croats and Serbs. Even today – 17 years after the Dayton Agreement – Bosnia-Herzegovina suffers from the aftermath of the conflict and violent quarrels between ethnic and religious groups. In other words, in order to quickly stop fighting among the parties to a conflict, and to support diplomatic efforts for conflict settlement, interventionists require both robust and agile military capabilities to halt hostilities and an efficient long-term strategy for the regeneration and stabilization of the conflict region.

## **Enhancing European Defense Cooperation**

Recent history suggests that addressing large scale complex emergencies such as the Indian Ocean Tsunami, or complex endeavors of the scale of the multinational intervention in Afghanistan, are an increasing burden on purely national capabilities, and coalitions tend to be the preferred way of sharing such burdens. This is especially true for European countries such as the United Kingdom (UK), France, Germany and others who are in the process of constraining defense spending in order to help reduce public debt. In addition, as already noted, the US pivot to the Asia-Pacific region, will force the European allies to become serious about addressing the longstanding problem of the transatlantic gap in military capability.

Thus, beyond restructuring national forces and improving the efficiency of national defense spending, the question is whether and to what degree the respective national programs are

- 1) efficient in the sense of maximizing synergies between them and avoiding duplications;
- 2) complementary to close potential capability gaps; and,
- 3) agile enough to permit joint adaptation for meeting newly emerging security challenges.

Thus, the question is, can today's national defense planning approaches practiced independently by European nations be transformed into more cooperative multilateral approaches that support a convergent development of national military forces?

### **Characteristics of a Convergent Approach**

A convergent approach would be characterized by deliberate interaction and information sharing between the defense planning authorities of the European nations similar to what the N2C2M2 (NATO, 2010) describes for the C2 of military operations and management of complex civil-military endeavors including their planning.<sup>11</sup> The ultimate result of this potential transformation might be to enable the collaborating nations to rapidly put together a joint 'Information Age Force' (of which the NATO Response Force might be an extant prototype) capable of dealing with the resulting uncertainty and complexity implied by large scale emergencies.<sup>12</sup> In analogy to the N2C2M2, we consider improved cooperation in defense planning and capability development among European countries as the prerequisite to a convergent development of national militaries toward more effective and efficient collective defense capabilities. To this end, we take a closer look at the implications

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<sup>11</sup> In fact, C2 or management involves continuous adaptation of the initial plans as operations or endeavors unfold in a dynamic operational environment (Alberts and Hayes, 2007). This is particularly true for defense planning as changes in the defense and security environment need to be responded to or exploited so that the capabilities necessary for protecting the security interests of nations or an alliance are maintained.

<sup>12</sup> See Alberts and Hayes (2003) p.97 for a discussion of the desired characteristics of Information Age Forces.

of the five C2 approaches defined by the N2C2M2 as milestones on a journey to network-enabled C2 that NATO forces require to improve their operational capabilities.

### Options for Europe

It should be kept in mind here that in the context of European defense planning the term *Entity* refers to national defense planning authorities as opposed to military and civilian units in the N2C2M2. Similarly, the term *Collective* refers to the defense planning authorities of NATO and/or the EU.<sup>13</sup>

- **Conflicted C2 Approach.** This approach refers to *disjointed operations* when the entities (nations or national representatives) participating in an endeavor plan and operate independently, with no interactions, no exchange of information, and disregard of the collective. This results in the possibility that their individual outcomes are in conflict with each other thus generating adverse effects. Similarly, ***disjointed defense planning***, when entities (nations) plan independently disregarding the collective, involves the risk of wasteful redundancies and non-interoperable and incompatible capabilities. As a consequence, the effectiveness of collective operations is degraded and defense spending is inefficient.
- **De-Conflicted C2 Approach.** The objective of *de-conflicted operations* is to avoid negative cross-impacts caused by incompatible operational plans and capabilities. It is characterized by partitioning the problem space. In order for entities to de-conflict their intents (objectives), plans and actions, they need to be able to recognize potential conflicts and resolve them by partitioning across function, space, and time. This results from limited information sharing and limited interactions. It requires that entities accept some operational constraints and thus transfer, to the collective, those decision rights that are necessary to ensure de-confliction. ***De-conflicted defense planning*** implies essentially that defense plans of entities are compatible and defense equipment and logistics standardized to the degree that cross-servicing among entities is possible.<sup>14</sup>
- **Coordinated C2 Approach.** Here the objective is to increase overall effectiveness. Coordination involves the development of a degree of common intent and an agreement to link actions in the various plans being developed by the entities. This, in turn, requires a significant amount of information sharing, thus broader dissemination, and a richer set of interactions, both formal and informal, among

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<sup>13</sup> In the long term, the defense planning authorities of NATO and the EU would likely merge as NATO's transatlantic capability gap diminishes. After all, of the 26 European countries belonging to NATO, 23 are members of the EU. NATO data indicate that 92% of total defense expenditures of European NATO members in 2011 came from EU members. Thus, it is essentially EU member countries that make up NATO's European Pillar. Building down the gap would make NATO more European, and eventually result in a "European NATO" as the United States is re-balancing its strategic interests toward Asia (Major, 2013).

<sup>14</sup> De-confliction (by means of spatial and timely separation) of allied operations was the common approach to defense planning in NATO during the Cold War when NATO allies shared the common objective of deterring an aggression by the Warsaw Pact.

those entities responsible for establishing intent and developing plans. A coordinated approach requires that the collective not only be ceded decision rights that are associated with the coordination process but also the decision rights associated with the implementation of agreements that result from the coordination process. Simply speaking, ***coordinated defense planning*** in Europe therefore requires that the respective nations interact in developing common objectives, and defense planners of the various nations interact during the development of national defense plans. These must be reviewed iteratively and coordinated by the collective (NATO/EU) as to whether those plans enable the collective capabilities required to meet common objectives.

- **Collaborative C2 Approach.** The objective is to develop significant synergies through the development of a single integrated plan shared by all entities. Their intents are subordinated to common intent. Entity plans must be supportive of the single integrated plan. Collaborating entities accept symbiotic relationships and are highly interdependent. Very frequent (almost continuous) interaction between and among entities, or individuals/organizations, involving richer and more extensive information exchange, is required to establish shared understanding of situations and their requirements, and the development of a single shared plan. Once common intent and a shared plan have been established, the collective returns decision rights to the entities to develop supporting plans and dynamically adjust these plans collaboratively. Thus, practicing a collaborative approach requires that entities accept significant constraints on their plans and actions. It follows that an approach to ***collaborative defense planning*** involves development of a common overall plan by the collective defining the constraints for national force planning. The results of national force planning are integrated into the overall plan and adjusted collaboratively to cope with changes in the operational and strategic environment.
- **Edge C2 Approach.** Here the objective is to enable the entities of a collective to self-synchronize. This requires that a rich, shared understanding of the situational dynamics exists across the contributing entities. This in turn requires a robustly networked collection of entities with widespread and easy access to information, extensive sharing of information, rich and continuous interactions, and the broadest possible distribution of decision rights. Edge C2 distinguishes itself from the other C2 approaches by replacing deliberate and formal coordination and collaboration mechanisms within the collective with the dynamics of emergence and self-synchronization of its entities. Whether an Edge approach is at all relevant for defense planning in general is open to question. However, at this time, it appears that it would be useful for collaborating nations to rapidly put together joint 'Information Age Task Forces' capable of dealing with the resulting uncertainty and complexity implied by complex endeavors (e.g., Libya, Mali). In addition, the development of special joint capabilities and their continued adaptation is required to meet new threats such as Cyber War.

Coping with this kind of problem requires a high degree of individual and organizational agility. The findings from the validation case studies performed by NATO RTO SAS-065<sup>15</sup> indicate that, in addition to resources being ill-matched to the tasks at hand, deficiencies in operational performance observed were mostly due to an immature C2 approach. It also was shown that the degree of maturity required, or *requisite maturity*, for a satisfactory operational performance depends on the complexity and dynamics of the operational environment (Huber and Lechner, 2010). Thus, the case study results confirm that C2 is a critical enabler for operational performance and should therefore be at the center of attention for defense planners.

The transformation of the de-conflicted defense planning approaches, practiced routinely by the European members of NATO during the Cold War, toward a shared collaborative approach as described above was essentially what Huber and Schmidt (1999) meant by “Convergent Defense Planning” as a prerequisite for building down the transatlantic gap in NATO’s military capabilities. However, Europe’s defense planning approaches have not changed much since the end of the Cold War. On the contrary, it seemed that in the 1990s defense planning returned to disjointed approaches as demonstrated by national governments unilaterally cutting defense budgets, while military leadership tried to maintain the Cold War force structures designed for territorial defense. A case in point is Germany: Irrespective of legal and constitutional constraints, the country was hard pressed to deploy (because of its force and personnel structure) more than 7,300 troops (from an army of 234,000 at the time) to the Balkans (Huber and Schmidt, 2004). It took Germany almost two decades and two aborted reform attempts before deciding, again unilaterally, to adopt the deployment-oriented “Neuausrichtung” (re-orientation) of the Bundeswehr that is currently being implemented (BMVg, 2011).

### **Recent Initiatives for Improving Defense Cooperation**

Albeit falling short of addressing the issue of convergent defense planning, there have recently been three prominent initiatives for improving defense cooperation in Europe by means of Role and Task Sharing and Pooling:

- The bilateral UK-France Cooperation Treaty;
- The Ghent Initiative (EU);
- Smart Defense (NATO).

*Role and Task Sharing* implies relinquishing certain roles and tasks that will be taken care of by partners on a reciprocal basis. In other words, defense capabilities of the respective

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<sup>15</sup> The case studies included evaluation of combat reports and military exercises (101<sup>st</sup> Airborne Division, Stryker brigades, UK Wise Wargames); peace operations (IFOR, KFOR); simple disaster response (Elbe River Flood 2002, Strong Angel III, Golden Phoenix); complex disaster response (Katrina, Tsunami 2004, Pakistan Earthquake 2005); data generated by the experimental platform ELICIT (Experimental Laboratory for Investigating Collaboration, Information-sharing, and Trust).

nations will become interdependent and, therefore, nations must be assured that in case of need they can fall back on each other's capabilities.<sup>16</sup> Role and Task Sharing implies a level of cooperation categorized by NATO RTO SAS-065 as Collaborative C2. This requires, however, that participating nations build trust and remove reservations about the availability of shared roles and tasks when faced with a defense challenge or a United Nations (UN)-mandated intervention.

*Pooling* refers to cooperative solutions involving two or more partners who join efforts in the development and procurement of military equipment, along with the organizational and operational capabilities and equipment that each of them needs, but cannot afford to individually develop, procure, and/or operate efficiently.<sup>17</sup>

Both of these cooperation mechanisms offer significant opportunities for savings while potentially improving the collective capabilities of European militaries and the efficiency of collective defense spending provided, however, that the respective opportunities are systematically exploited. To that end, it would be desirable that European nations move beyond specific agreements on defense cooperation and develop a comprehensive approach, based upon the N2C2M2, to guide national defense investments, priorities, and reforms, and shape force transformation. Such an approach would facilitate the articulation of measurable goals and objectives.

### **UK-France Defence Cooperation Treaty**

This treaty is a prominent example of pooling intended to improve collective defense capability through UK and French forces working more closely together, contributing to more capable and effective forces and ultimately improving the collective capability of NATO and European defense (MoD, Codex, 2010). The treaty aims to create:

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<sup>16</sup> For this reason, there is still considerable reluctance, especially among larger European states, to enter into such role and task sharing arrangements especially related to what they consider as core capabilities. Because they can no longer afford to maintain sufficient core capabilities for pooling arrangements, smaller nations might become more interested in role and task sharing especially with larger countries such as the UK and Germany providing core capabilities in exchange for specialized capabilities. A current example of task sharing is Aerial Surveillance and Air Policing for the Baltic States that is provided by NATO from a pool of mainly European air defense forces.

<sup>17</sup> Pooling has a long tradition in NATO. While it reduces each pooling partner's operating cost of the pooled items such as AWACS, there is significant evidence that pooling resources for multilateral system development and production may have drawbacks regarding the overall cost effectiveness of a program as well as the savings expected by the partners and the timely availability of products unless the partners share common requirements and development and production programs are unilaterally managed. A case in point is multilateral development and multisource production of military aircraft. Based on empirical data, Herbst (1977) has shown that the cost of multinational combat aircraft development programs increases by a factor of the square root of the number of nations involved. Thus, the cost of a four nation program would be twice that of a unilateral program. In other words, while pooling saves each nation half of the cost of a unilateral program, the four together lose half of the potential collective capability of a unilateral program. Airbus experts believe that today the cost growth factor is considerably higher because of the higher complexity of modern combat aircraft and the bureaucratic industrial and governmental management processes involved in multi-nation development and production. The evidence available from the Eurofighter, Tiger, NH90 and A400M programs supports this view.



- A Combined Joint Expeditionary Force (CJEF) able to carry out a range of operations either bilaterally or through NATO, the EU or other coalition arrangements.
- A maritime task group built around the French carrier *Charles de Gaulle* with the ability to deploy a UK-French integrated carrier strike group incorporating assets from both countries, by the early 2020s.

In addition:

- The UK MoD and its French counterpart agreed that each devote an annual budget of 50 million Euros to shared Research and Development (R&D).
- The UK and France recently signed a treaty agreeing to the joint construction and operation of a new hydrodynamic facility ('EPURE') in France and a technology development center in the UK (MoD, Codex, 2010).

These various initiatives indicate a level of linkage between the defense investments and plans of the UK and France, implying that the relationship is moving towards a Coordinated level in the categorization of C2 approaches.

### **The Ghent Initiative**

Proposed by Germany and Sweden in November 2010 following their discussions in Ghent on strengthening Europe's military capabilities, and building on existing examples of cooperation, the Ghent Initiative's "goal is to preserve and enhance national operational capabilities – with improved effect, sustainability, interoperability<sup>18</sup> and cost efficiency as a result". To this end, all EU member states need to analyze their military capabilities and support structures along three categories:

1. Deemed essential for individual nations and therefore maintained on a strictly national level limiting cooperation to measures that increase interoperability;
2. Where closer cooperation is possible without creating too strong dependencies such as *pooling* training and capabilities including airlift and logistics capabilities; and,
3. Where mutual dependency and reliance upon European partners is acceptable in an international role- and task-sharing framework such as support structures for training and exercises, military academies, test and evaluation facilities, and pilot training, and capabilities such as, for example, Seas Surveillance Cooperation Baltic Sea (SUCBAS).

The authors of the initiative recommended that these analyses be concluded in the first half of 2011 and consolidated afterwards by relevant EU bodies as a basis for clarifying possible areas of cooperation, "to be presented to the (EU) Ministers of Defense" (Ghent Initiative, 2010; Brune et al, 2011).

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<sup>18</sup> Command Structures and Procedures is regarded as the one of six areas for increased cooperation that "would offer the potential of increased interoperability and real savings". The other five areas are related to Military Requirements, R&D, Acquisition, Training and Exercises, and Operating Cost.

Apparently, the *Ghent Initiative* triggered the establishment of the EU Commission's Defence Task Force in 2011. Its work provided the basis for the Commission's communication of July 2013 titled "Towards a more competitive and efficient defence and security sector" that outlined a respective action plan to be discussed by the European Council at its meeting in December 2013 (Biscop, 2013). On the basis of the Commission's recommendation, "the Council has identified a number of priority actions built around three axes: increasing the effectiveness, visibility and impact of the Common Security and Defence Policy (CSDP), enhancing the development of capabilities and strengthening Europe's defence industry" (EUC, 2013).<sup>19</sup>

### **Smart Defence**

Inspired by the remarks made by US Defense Secretary Robert Gates in June 2011<sup>20</sup>, NATO Secretary General Rasmussen proposed the concept of *Smart Defence* at the Munich Security conference in February 2012. It was endorsed by the Leaders of the NATO-member countries at the Chicago Summit of the Alliance in May 2012. The concept encourages allies to cooperate in developing, acquiring and maintaining military capabilities to meet current security problems in accordance with the new NATO strategic concept. According to Rasmussen, "NATO smart defence means pooling and sharing capabilities, *setting priorities and coordinating efforts better*". Some 20 bi- and multilateral projects were approved for this initiative in Chicago by the NATO leaders. At the same time, however, item 7 of the press release of May 20 on the Declaration (Toward NATO Forces 2020) states that "The development and deployment of defence capabilities is first and foremost a national responsibility". Provided it is systematically implemented as a comprehensive process and managed by a competent NATO and/or EU agency, *Smart Defense* could be regarded as a Coordinated Approach to defense planning in the alliance thus providing the basis for the evolution of a future Collaborative Approach.

### **Steps toward Convergence?**

The bilateral UK-French cooperation treaty may be considered as an initial step forward in gradually evolving, from specific bi- or multilateral agreements on defense cooperation, a comprehensive approach for systematically exploiting cooperation opportunities for improving collective capabilities of European militaries and the efficiency of collective defense spending. Additionally, the *Ghent Initiative* can be seen as another step in the evolution of such a comprehensive approach since an analysis of ongoing cooperation

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<sup>19</sup> The council debate was preceded by a meeting with the NATO Secretary-General who welcomed the ongoing efforts and commitments by the EU and its member states as being compatible with, and beneficial to NATO.

<sup>20</sup> Gates stated that NATO faced "the real possibility of a dim, if not dismal future" because of the chronically underfunded defense apparatus in Europe (ECO, 2012). In fact, only four European countries have committed to the Alliance's agreed benchmark of spending two percent of their GDP on Defense (Bramel, 2012).

projects along the Initiative's capability categories could provide a realistic basis from which to continue moving forward.<sup>21</sup>

In the end, such an approach would link national defense plans integrating them into a common European plan reflecting the common security requirements of NATO and the EU. It is argued that, in order to maximize the synergistic effects of cooperation, *Smart Defence* needs to reach beyond today's project-oriented cooperation agreements within otherwise mostly independent national defense plans and adopt the conceptual framework provided by the N2C2M2 for convergent defense planning in Europe.

In summary, following the path described in the N2C2M2 could lead to more convergent development of collective military capabilities. As convergence grows with the degree to which nations share common intent, information, and planning processes, more mature levels of defense cooperation can be achieved. Furthermore, they could be achieved both in more timely a manner and with the realization of improved efficiencies.

### **Final Thoughts**

By now it is widely accepted that emerging changes in the US strategic doctrine imply that Europeans can no more count on the willingness of the US to step in and fill capability gaps if, as in Libya, European capabilities turn out to be insufficient to handle conflicts in their backyard and other regions that are of vital interest to them, but not to the US. Therefore, unless Europeans heed the Libyan lesson and become serious about improving their national and collective military capabilities, they eventually might be left with no choice but to let events with the potential to threaten their security take their course hoping that humanitarian aid and toothless diplomatic efforts will be sufficient to restore stability and preserve their interests. Therefore, Europeans must finally begin to mutually coordinate their largely disjointed force structure and armaments planning as a basis for the evolution of collaborative approaches to defense planning that reach beyond improving pooling and sharing of assets as envisioned by the Ghent Initiative adopted by the EU, and NATO's concept of *Smart Defence*. We propose that the N2C2M2 be adopted as a conceptual framework for the development of the organizational and communication infrastructure for the transformation of defense planning in Europe (key word: Convergent Defense Planning), beginning perhaps with a core group of "willing" governments.

Summarizing his analysis of *Smart Defence*, Mölling (2012) concluded that pooling and sharing can contribute to solving the problem of diminishing European military capabilities

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<sup>21</sup> The capability categories proposed in the *Ghent Initiative* reflect the defense planning approaches discussed above: (de-conflicted (category 1), coordinated (category 2), collaborative (category 3). An evaluation of the more than 100 separate co-operation projects identified by Mölling (2012) that have been going on for some time between NATO and EU States would allow the capture of the current levels of defense cooperation in NATO and EU.

only “if the European nations are willing to re-consider the priority of political sovereignty over military effectiveness and economic efficiency” (p. 3). In other words, the fundamental question is when and to which degree will European nations be ready to delegate – contrary to what NATO’s Chicago Summit Declaration in 2012 explicitly excluded – decision rights regarding the development and deployment of defense capabilities to NATO or the EU, respectively.

Based on his investigations of more than 20 years ago, on reducing the transatlantic gap in military capabilities, Huber concluded that: ‘Therefore, nothing short of:

- replacing the many national defense and armament planning bureaucracies with common European defense planning and RDT&E agencies;
- consolidating European defense industries into viable business enterprises; and
- integrating the European militaries into European Armed Forces

will ever yield a return on European defense investments comparable to that achieved by the United States’ (Huber, 2003, p. 72).

Even though it was widely perceived as perfectly logical from an economic viewpoint, the idea of common European Armed Forces has never received much support among European political and military leaders. It is only now that this idea is beginning to re-surface as European countries start to debate options concerning how to reconcile meeting future security requirements despite austerity and faced with US Pivot. Improving defense cooperation beyond *Sharing and Pooling* is an indispensable prerequisite for building down, and eventually eliminating the transatlantic gap in military capabilities by the evolution of a common European military.<sup>22</sup>

The requisite transformation of defense cooperation, including convergent defense planning in Europe, will certainly be a complex endeavor, if only because of the large number of national political, economic, industrial, and military stakeholders involved. Its management requires a new conceptual approach for which these authors recommend the N2C2M2 as a model that has been validated based on numerous case studies and experiments (see NATO, 2010 and 2014).

**Caveat:** This paper reflects the views of the authors only and is not the official position of any organization.

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<sup>22</sup> For a detailed discussion of the opportunities and obstacles on the long road to European Armed forces the reader is referred to Major (2011).

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# Transformation of European Defense Cooperation: A Complex Endeavor

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# Content

- **Introduction:** The Transatlantic Gap in NATO Military Capabilities: A perennial issue and a critical challenge for the **European Pillar** as US rebalances its strategic doctrine toward the Asia-Pacific (Pivot) and Russia becomes more assertive vis-à-vis its borderlands;
- **Meeting the Challenge:** Enhancing Europe's Collective Military Capabilities despite austerity through a **Transformation of European Defense Cooperation** in both the operational and defense planning arenas;
- **NATO NEC C2 Maturity Model (N2C2M2):** Conceptual Basis for the Transformation of Defense Cooperation in Europe (efficient C2 and convergent defense planning);
- **Recent European Defense Improvement Initiatives:**
  - Bilateral UK-France Cooperation Treaty (2010) ;
  - EU Ghent Initiative (2010);
  - NATO Smart Defense (2012).
- **Concluding Thoughts and Caveat**

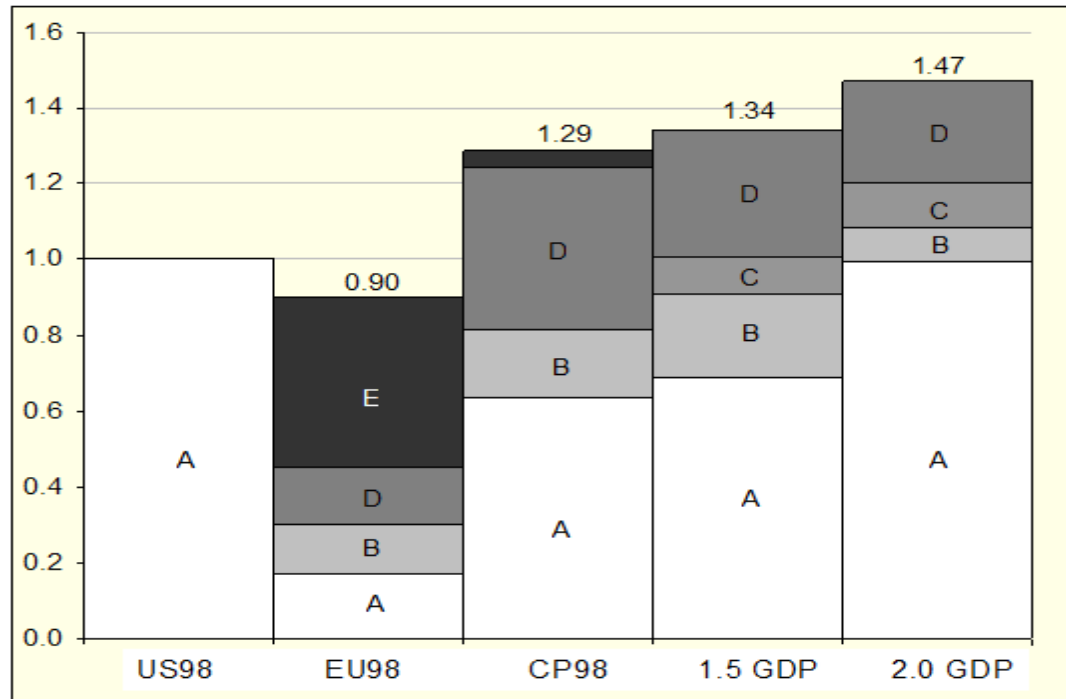
# Common Principle for Building Down the Transatlantic Capability Gap for Crises Response Operations (CRO)

[Huber and Schmidt, 1999]

*“Stepwise reduction of manpower and conscript levels in a manner that the highest possible level of modernization can be reached without having to increase the defense budget in real terms and subject to the constraints that*

- the existing capability for out-of-area (OOA) deployments (in the context of CRO) is not decreased and*
- active manpower levels must not decline below a level that is required for maintaining a sufficient pool of reservists for replacement and build-up as long as the resurgence of a massive ground force threat against NATO-territory may not be dismissed altogether.”*

# The Transatlantic Gap 1998



**CRO Capabilities of European NATO Allies relative to US Capability given different levels of sustained defense spending (Huber and Schmidt, 1999; Huber; 2003)**

# Convergent Defense Planning:

## Reasons why the Common Principle (CP) was dismissed

- **Spending cuts:** By 1998, the average defense spending of the European members of NATO had fallen to 1.7 of their GDP compared to 2.5 percent in the early 1990s;
- **No commitment** to sustain or increase 1989 defense spending in real terms. (Today, only UK reaches NATO's agreed benchmark of 2.0 percent GDP).
- **Differing interests:** Promoting, among NATO member nations, the idea of the **Common Principle** (CP) was – and still is – dismissed as unrealistic: “Defense planning is a national Responsibility” (Item 7 of NATOS's 2012 Chicago Summit Declaration);
- **No validated conceptual models** for the implementation of CPs.

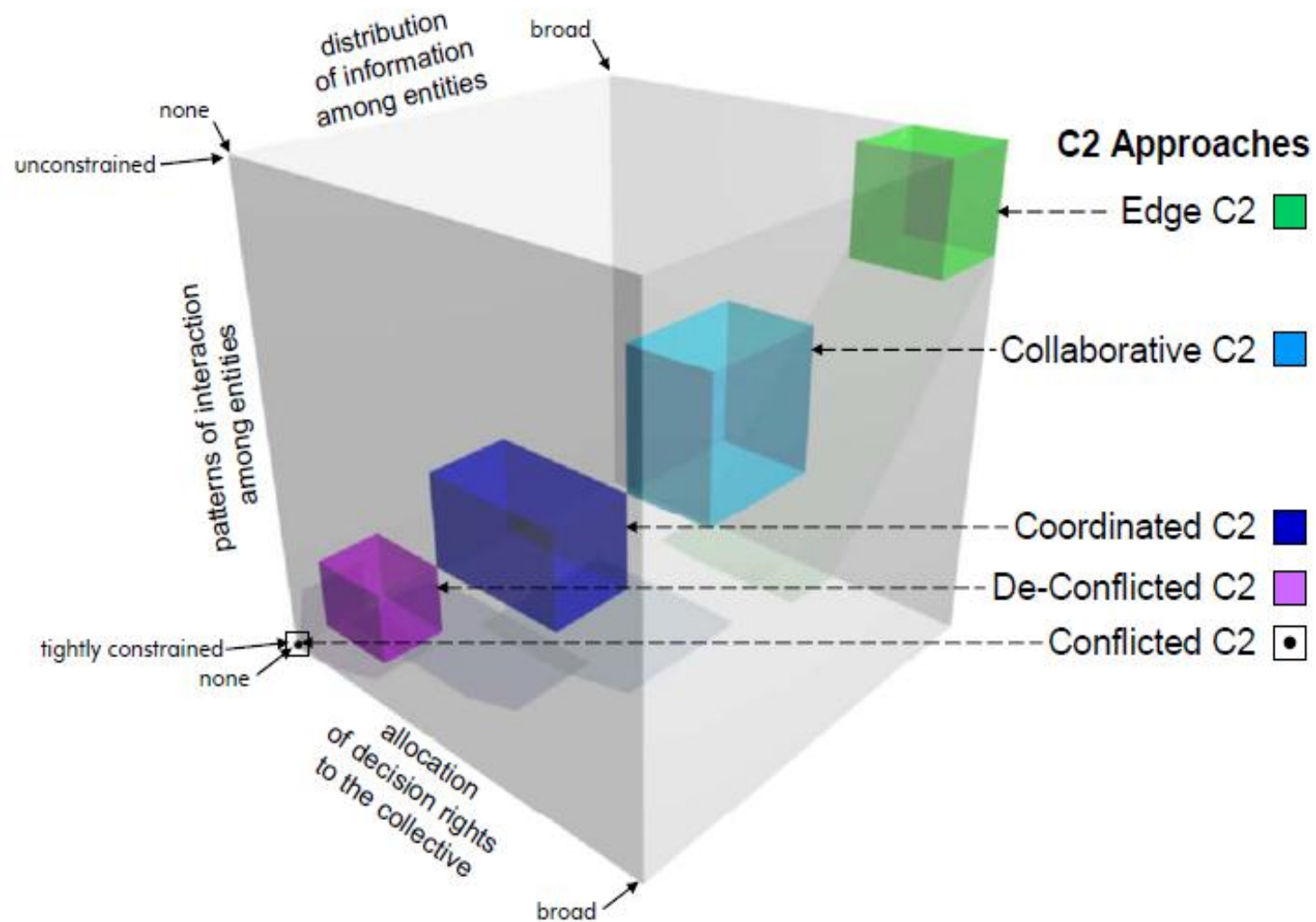
# Enhancing European Defense Cooperation

- Purely national capabilities insufficient to address complex emergencies (e.g. Afghanistan, Libya, Mali, Central Africa);
- Today's independent national defense planning approaches in Europe need to be replaced by cooperative ones supporting a convergent development of national capabilities that are
  1. efficient (maximizing synergies between them, no duplication);
  2. complementary (closing capability gaps);
  3. agile enough to meet new security challenges.

# Cooperative Defense Planning and N2C2M2

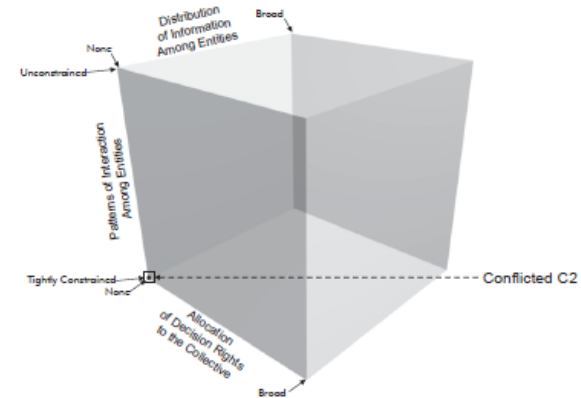
- N2C2N2 is a validated conceptual basis for improving collective capabilities through network-based cooperation among a collective's entities.
- Thus, it is proposed that N2C2M2 be extended to serve as conceptual underpinning for the evolution of increasingly cooperative national defense planning approaches in NATO/EU and convergent national capabilities.

# The NATO NEC C2 Maturity Model [SAS-065]

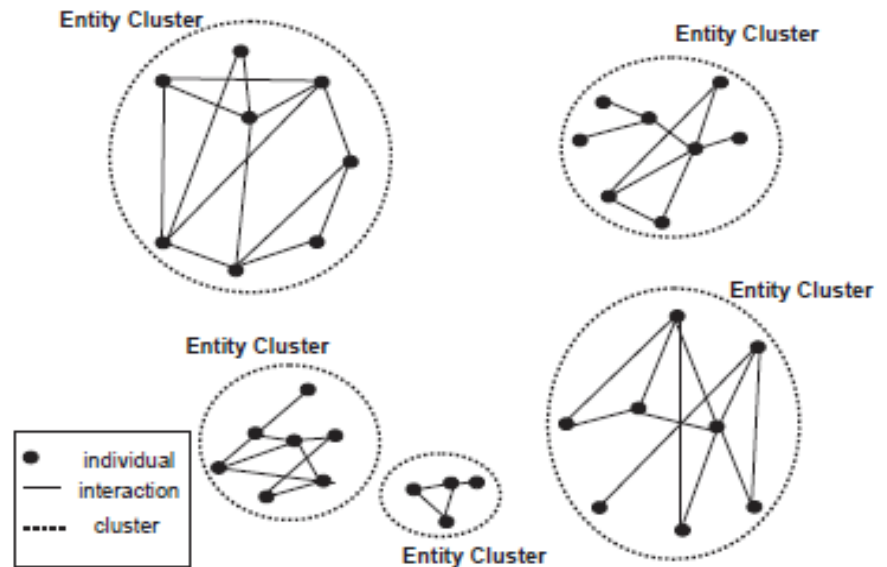


# Characteristics of Conflicted C2 [SAS-065]

- No collective objective;
- No distribution of information between or among entities;
- No interactions at all among entity clusters.



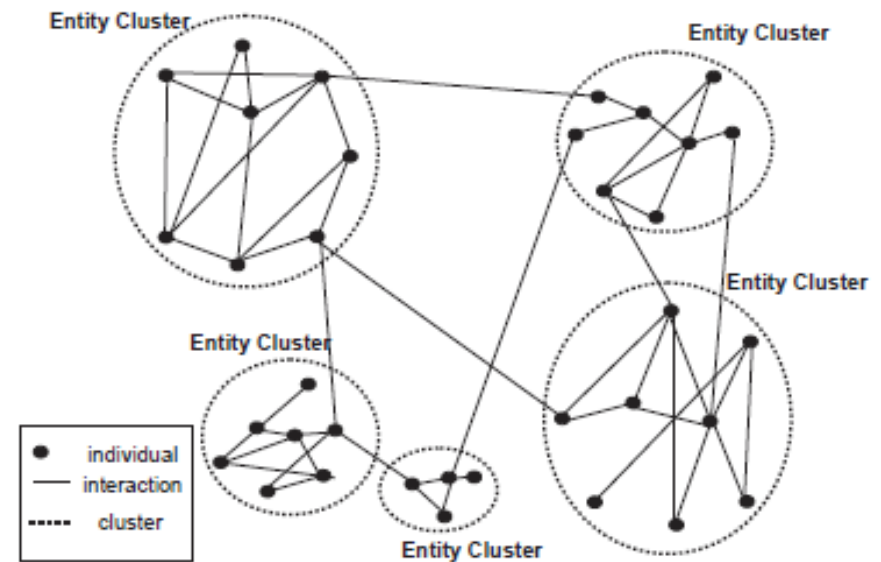
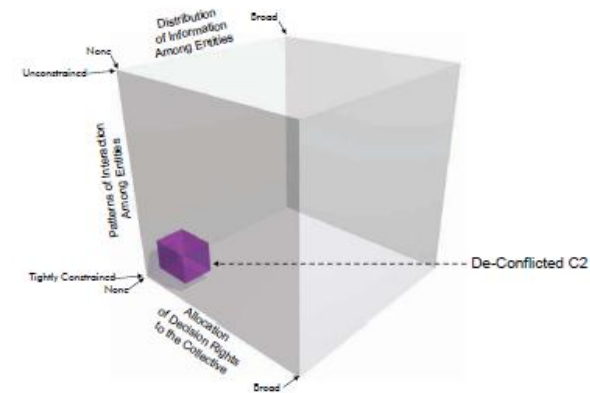
With regard to defense planning, the entity clusters comprise the national organizations responsible for planning each NATO nation's defense capabilities.





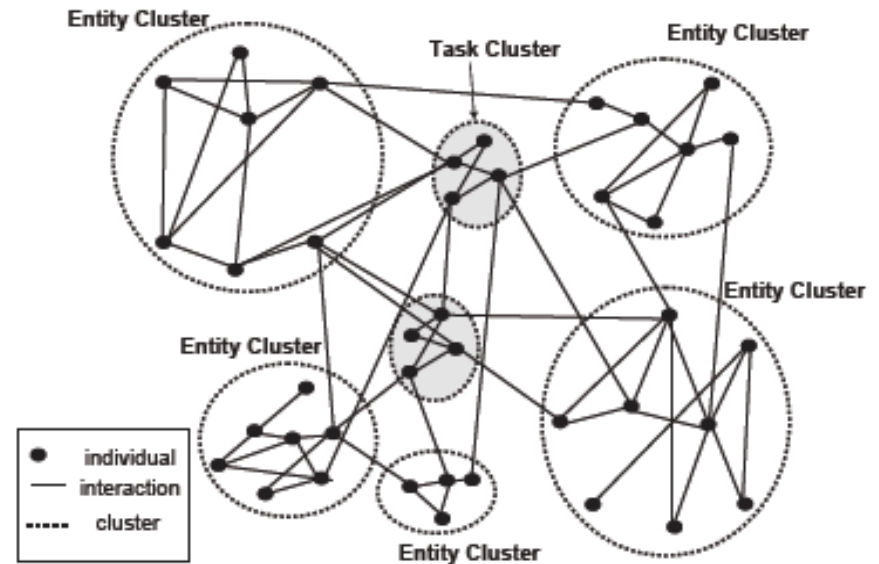
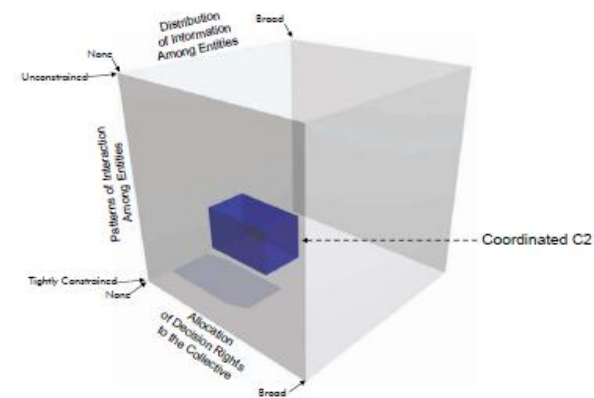
# Characteristics of De-Conflicted C2 [SAS-065]

- Partitioning of the problem space across geography, time/space, echelon and function;
- De-confliction of intents, plans, actions and the ability to recognize potential conflicts;
- Limited distribution of information and limited interaction.



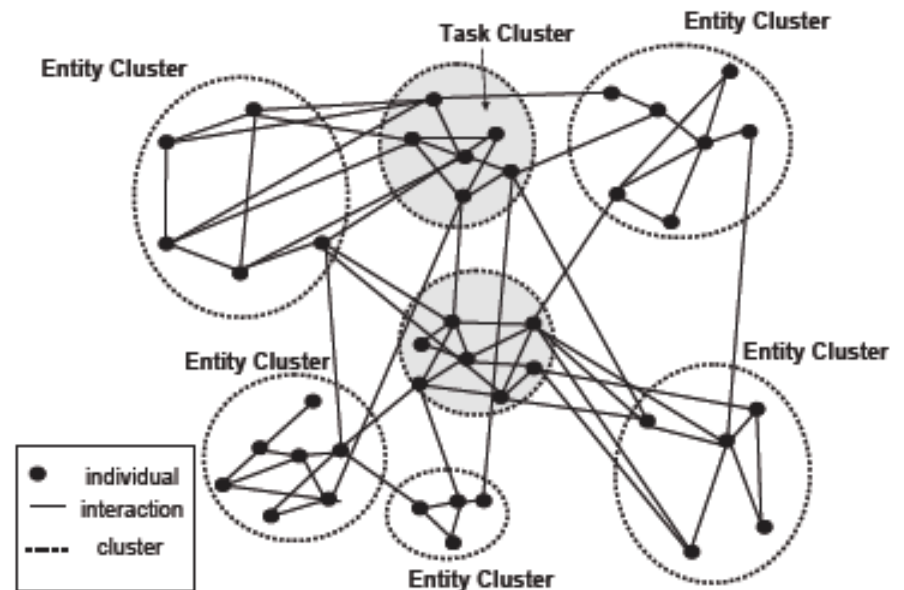
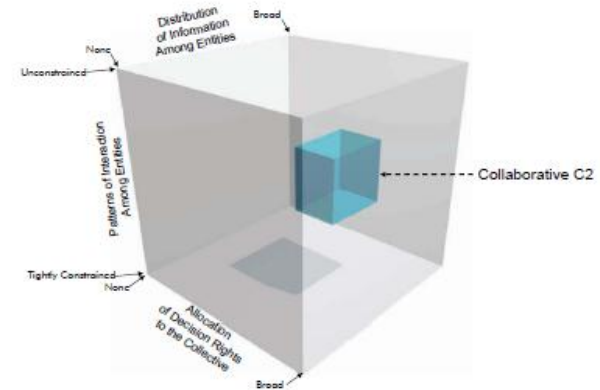
# Characteristics of Coordinated C2 [SAS-065]

- Development of a degree of common intent. Entities are constrained by the common intent;
- Linking of plans and actions to reinforce and enhance effect;
- Clusters of interaction appear involving two or more entities working together.



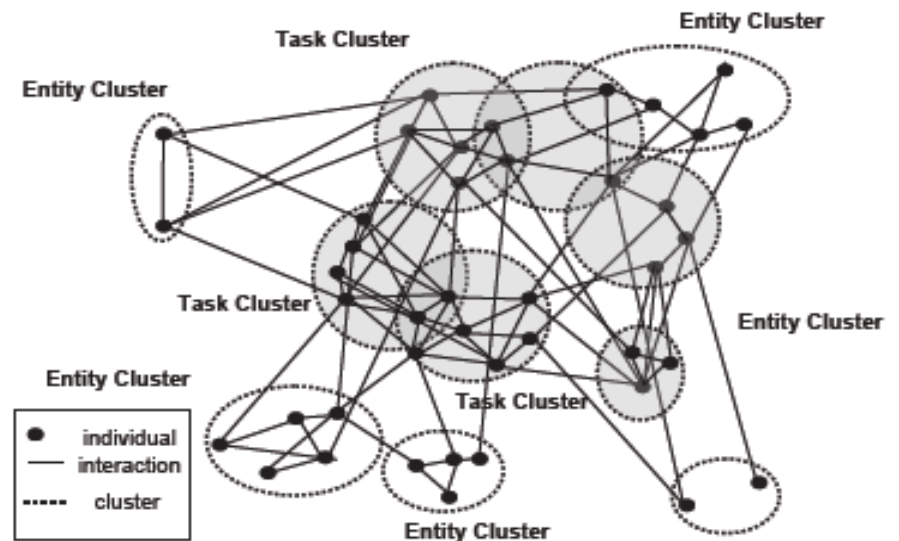
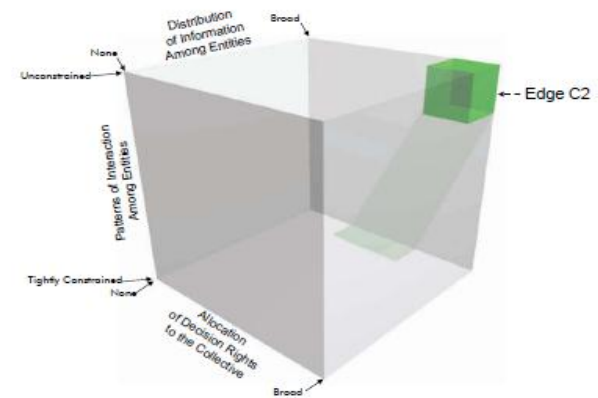
# Characteristics of Collaborative C2 [SAS-065]

- Collective negotiates and establishes a collective intent and a single shared plan;
- Entities are symbiotic and interdependent;
- Rich sharing of non-organic resources some pooling of organic resources;
- Formation of task related clusters.



# Characteristics of Edge C2 [SAS-065]

- Patterns of interaction are dynamic and continuous and reflect confluence of mission and circumstance;
- Distribution of information is emergent as a result of dynamic patterns of interaction;
- Rich shared understanding within the collective with rich and continuous interaction;
- Task related clusters of entities dominate but are emergent and not static.



# Transformation of European Defense Planning

## A Complex Endeavor

1. **Conflicted Planning:** independent / disjointed (**no interactions** between national planners);
2. **De-conflicted Planning:** avoiding the generation of incompatible structures/capabilities (**limited interactions** and information exchange between national planning authorities);
3. **Coordinated Planning:** linking plans and capabilities (**sufficient interactions** and continuous information exchange between national defense planning authorities);
4. **Collaborative Planning:** nations establish collective intent and develop **common reference plan** for national defense planning, integration of national plans into overall collective defense plan, adjusted cooperatively to cope with changes in the operational and strategic environment;
5. **Edge-like Planning:** national planning must become part of a highly agile multilateral (supranational) defense planning approach.

# Current Situation in Europe

- Independent National Defense Planning each reflecting national political preferences of 28 sovereign countries (“The development and deployment of defence capabilities is first and foremost a national responsibility”. (Item 7 of the NATO 2012 Chicago Summit Declaration “Towards NATO Forces 2020)).
- NATO/EU collective military capabilities for deployment “out-of-area” are compiled ad hoc from whatever capabilities “willing” nations have and are prepared to contribute;
- Defense Cooperation has been and still is largely limited to **Pooling and Sharing** (P&S) in the context of bi- and multilaterals projects and agreements that reflect the national preferences;
- Aware of the European capability gaps (Libya, Mali, Central, Africa) three initiatives for improving defense cooperation Europe have been recently started.

# Recent Initiatives for Improving Defense Cooperation in Europe

- **The Bilateral UK-France Cooperation Treaty (2010)**
  - Combined Joint Expeditionary Force CJEF);
  - Maritime task group around French carrier *Charles de Gaulle*;
  - Shared R&D;
  - Joint modernization of Nuclear Facilities/Capabilities.
- **The Ghent Initiative (EU)**
  - German-Swedish Initiative (2010);
  - Code of Conduct on Pooling & Sharing (EDA, 2012): to be implemented on a national and voluntary basis, **in line with defense policies of EU Member States**;
  - Annual EDA report on the state of P&S and EU capabilities.
- **Smart Defense concept (NATO)**
  - Encouraging allies to cooperate (P&S) in development, acquisition and operation of military capabilities in accordance with NATO's strategic concept (2012 Munich and Chicago);
  - 20 bi- and multilateral cooperation projects approved by NATO leaders at Chicago 2012 Summit.

# German-Swedish Initiative (2010)

## Cooperation Categories

- **Limited Cooperation:** Essential for the nation and therefore maintained on a strictly national level (cooperation limited to improving interoperability): **de-conflicted planning**;
- **Closer Cooperation** is possible without creating too strong dependencies (such as pooling of strategic and tactical airlift and logistics capabilities): **coordinated planning** ;
- **Mutual dependency and reliance on European partners is acceptable** in an international role-and task sharing framework (e.g. support structures for education, training, and exercises; test and evaluation facilities; aerial and maritime surveillance such as, e.g., in the Baltics: **collaborative** planning.



# Code of Conduct on Pooling and Sharing (P&S)

- Systematically consider cooperation from the outset, **in national defense planning of Member States**, the whole life-cycle of a capability, including R&D;
- Accord P&S projects a **higher degree of protection from potential cuts**;
- Take advantage of **synergies with wider European policies**, including regulatory frameworks, standards and certification;
- European Defense Agency (EDA) is mandated to
  - serve as a platform for **information exchange** to avoid gaps or duplication, to share expertise and best practices and to increase transparency (coherence);
  - annually report to Defense Ministers the status of current P&S initiatives, new opportunities and an analysis of the capability situation in Europe (assessment).

# Conclusions

- Changing nature of crises and conflicts: uncertainty and complexity;
- Large scale complex emergencies exceed national capabilities;
- Need for effective and efficient collective capabilities (intervention and deterrence) including agile C2 and management systems;
- Enhanced cooperation between national defense planners -> more convergent development of collective military capabilities;
- Convergence improves with the degree to which intent, information, and planning processes are shared.

# Return on Defense Investments:

A Quote from 20 Years ago

“Nothing short of

- replacing the many national defense and armaments planning bureaucracies with common European defense planning and RDT&E agencies;
- consolidating European defense industries into viable business enterprises; and
- integrating the European militaries into European Armed Forces

will ever yield a return on defense investments comparable to that achieved by the United States” (Huber, 2003, p. 149.)

# Building Down

## NATO's Transatlantic Capability Gap

- Enhancing defense cooperation in Europe is key to building down NATO's transatlantic gap (Convergent Defense Planning → European Armed Forces);
- Building down, and eventually eliminating, the transatlantic capability gap
  - supports the US in rebalancing its strategic interests between Europe and Asia (Pivot) while strengthening NATO's "European Pillar";
  - widens the freedom of action for US, NATO, and EU to cope with the uncertainties of the security environment.

# Caveat

This paper reflects the views of the authors only  
and is not  
the official position of any organization!